



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,239	06/09/2006	Nobuaki Matsuoka	292337US26PCT	1964
22850	7590	08/05/2009		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER FORD, NATHAN K	
			ART UNIT 1792	PAPER NUMBER
			NOTIFICATION DATE 08/05/2009	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/582,239

Applicant(s)

MATSUOKA ET AL.

Examiner

NATHAN K. FORD

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2009.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 9-12 and 14-23 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-7, 9-12 and 14-23 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Applicant's Response

Acknowledged is the applicant's request for reconsideration received April 28, 2009. Claims 1, 4, and 20-21 are amended.

The applicant contends:

(1) While Kimura's processing groups may include both "a coating unit and a developing unit, Kimura does not describe that the coating unit and developing unit are integrated into the processing group" (p. 12). Further, these units are not disclosed as being detachable.

(2) The applicant's invention teaches independent processing blocks which are not affected by failures in other units. Further, throughput may be modulated simply by adding or removing a single processing block. Conversely, Takekuma requires at least two processing block to be removed to affect throughput, since the coating and developing units are disposed in distinct processing blocks.

(3) The applicant's teaching of independent and detachable processing blocks produces unexpected results with respect to throughput and the accommodation of failure within a process block. Ultimately, one of ordinary skill would not expect the results achieved with the apparatus produced by combining the prior art references.

In response:

(1) The examiner does not recognize a distinction between a processing group which *includes* both coating and developing units versus a process group which *integrates* these units within it. It should also be noted firstly that the claims require merely that each process block "include" a coating unit and a developing unit and secondly that the applicant actually acknowledges that Kimura's processing group "may *include* a coating unit and a developing unit." Moreover, to cite Kimura directly, "In a first processing unit group (G1)...a resist coating unit and a developing unit are two-tiered from bottom in order" (8, 61ff). In light of these disclosures, the examiner maintains that Kimura properly teaches the feature of a processing block including a coating and developing unit.

Lastly, although Kimura may not teach the feature of detachable processing groups, this feature is already disclosed by the primary reference, Takekuma.

(2) Firstly, Takekuma teaches detachable process blocks. Secondly, the rejection of claim 1 demonstrates the obviousness of incorporating both developing and coating blocks within each of the reference's process blocks. Thus,

Art Unit: 1792

Takekuma's process blocks are rendered structurally independent and provide the same advantages achieved by the applicant's apparatus.

(3) Contrary to the applicant's assertion of unexpected results, the examiner maintains that the result of increasing throughput by adding more processing units to a system is intuitive and would be fully expected by one of ordinary skill. Similarly intuitive is the concept of rendering each process block independent so that a given processing block remains unaffected by a failure in an adjacent block.

Although the articulated prior art combinations may not be explicitly motivated by a promised result of an increase in throughput or the capacity to accommodate individual process block failure, the fact that the applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Kimura, for instance, in providing justification for the incorporation of both coating and developing units within Takekuma's processing blocks, thereby rendering each block independent, recognizes the additional advantage of facilitating system maintenance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4-7, 11, 14-15, 17-20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takekuma, US 6,377,329, in view of Kimura et al., US 6,439,822, Yoshioka US 6,168,667, Lei et al., US 6,277,199, and Makino et al., US 2005/0051091.

Claims 1-2, 4-5, 15, 17-18, 20, 22: Takekuma teaches the following (Fig. 5):

- A carrier block (10) including:
 - A carrier placement portion (21);
 - A substrate carrier (C);

Art Unit: 1792

- o A first transfer means (22);
- A second transfer means (61) provided adjacent to the carrier block for transferring the substrate along a transfer path (7, 34-43);
- A first delivery stage (62) capable of delivering a substrate between the first and second transfer means (7, 55-67; Fig. 9);
- A plurality of detachable process blocks (100, 300), each comprising (5, 62-67):
 - o A heating unit (23) (9, 18-40; Fig. 6);
 - o A third transferring means (30, 40) (Fig. 5);
 - o A second delivery stage (EXT) (Fig. 6);
- A light exposure machine (200) (8, 40-45);
- An interface portion (51) located between the transfer path and the light exposure machine;
- Wherein the transfer path extends from the interface portion to the carrier block;
 - o Wherein the process blocks are arranged on only one side of the transfer path;
- A chemical unit storing tank of chemical solutions (7, 14-17).

The processing blocks of Takekuma comprise multiple processing chambers; however, either exclusively developing units (5) or coating units (3) compose each block (Fig. 17). Nevertheless, the feature of accommodating both coating and developing units within the same processing block is well-known in the art. For example, Kimura discloses a modular processing apparatus wherein the processing blocks (G1, G2) are configured to accommodate both processing and developing units to facilitate easy maintenance of the system (8, 61ff; Fig. 10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the processing blocks of Takekuma to accommodate both coating and developing units to enable facile system maintenance and to achieve the predictable result of substrate processing.

Regarding the mobility of the transfer means: The first and third transfer means recited by Takekuma have the capability of three-axis motion and rotary capacity (6, 10-18). However, the second transfer means is moveable only in the y-direction. Nevertheless, merely because the inventor did not configure the second transfer mechanism with the mobility of the first and third mechanisms does not mean that it would be non-obvious to do so. The disclosure of the mobility of the first and third transfer mechanisms provides sufficient motivation for one of ordinary skill to

Art Unit: 1792

configure the second with similar mobility to achieve the predictable result of increasing the capability and efficiency of substrate transfer.

Regarding the sequencing of processing operations: A recitation concerning the manner in which a claimed apparatus is to be employed does not differentiate the apparatus from prior art satisfying the claimed structural limitations (*Ex parte Masham*, 2 USPQ2d 1647). Takekuma discloses a controller (90) capable of processing a substrate according to the applicant's claimed sequence.

Lastly, rather than being situated within a distinct structure which can be designated as a *transfer block*, the volume of the processing blocks encompasses Takekuma's second transfer means. Nevertheless, structurally discrete transfer blocks have been well-documented by the prior art. Yoshioka, for instance, delineates a transfer block (31) situated adjacent to a carrier block and having process blocks (33) arranged on only one side. The transfer block is structurally distinct. It would have been obvious to one of ordinary skill in the art to conceive the volume enclosing Takekuma's second transfer means as a distinct structure separate from the process blocks given the paradigm of Yoshioka's delimitation which cogently demonstrates the efficacy of the configuration. Further, it has been held that rearranging the parts of an invention involves only routine skill in the art (*In re Japikse*, 86 USPQ 70).

As would be apparent to one of ordinary skill, the incorporation of a transfer block would not compromise the process blocks' capacity for detachment. Further, it would be obvious to one of ordinary skill to render the process blocks detachable from the transfer block to facilitate maintenance and component replacement. It would also be within the capacity of one of ordinary skill, and structurally necessary, to detachably configure the utility lines to facilitate chamber detachment.

Although the primary reference discloses the use of electrical and signal lines branched to each process block, the reference is silent regarding the presence of utility lines that are capable of transporting a gas or liquid. Introduced in supplementation is Lei, who describes a gas panel connected to the chambers of a cluster tool. The panel distributes the necessary utilities to each chamber via supply lines, and its configuration enables easy access to the gas controlling components for maintenance and installation and also isolates gas leaks (1, 23-36; 1, 59ff). For these reasons it would have been obvious to one of ordinary skill to enclose the gas supplies and control mechanisms within a gas panel.

However, Lei's utility unit is not located within the transfer chamber, but external to it. Nevertheless, as Makino affirms by locating utility components within a volume of a transfer block, it would have been obvious to one of

Art Unit: 1792

ordinary skill to dispose utilities within or contiguous to a unit such as a transfer chamber to reduce the footprint of the apparatus system [0052]. Further, it has been held that rearranging the parts of an invention involves only routine skill in the art.

Regarding the specific fluid type which is provided by the utility lines: A recitation concerning the manner in which a claimed apparatus is to be employed does not differentiate the apparatus from prior art satisfying the claimed structural limitations. Lei's utility lines are capable of conveying the applicant's claimed fluids.

Claim 6: A recitation concerning the manner in which a claimed apparatus is to be employed does not differentiate the apparatus from prior art satisfying the claimed structural limitations. The apparatus is capable of applying a precursor to a substrate.

Claim 7: Figures 15 and 17 of Takekuma depict two process blocks (100, 300) of identical dimension. Further, it has been held that the configuration of the claimed element is a matter of choice which a person of ordinary skill would have found obvious (*In re Dailey*, 149 USPQ 47). It would have been obvious to one of ordinary skill to configure two process blocks disposed within the same modular tool to have identical heights, lengths, and widths.

Claim 11: Any portion of the carrier block which is contiguous to a process block can be considered a positioning member.

Claims 14, 19: As the rejection of claim 1 articulates, the transfer and process blocks are detachably connected, which inherently implies the existence of sites of connection/disconnection.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takekuma in view of Kimura, Yoshioka, Lei, and Makino and in further view of Masayki et al., JP 10-012528, wherein machine translation was used.

It has been held that rearranging the parts of an invention involves only routine skill in the art (*In re Japikse*, 86 USPQ 70). Nevertheless, Figure 1 of Masayki delineates the claimed arrangement, thereby demonstrating the suitability of the arrangement. It would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the interface of Takekuma as taught by Figure 1 of Masayki to achieve the predictable result of substrate processing.

Claims 9-10 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takekuma in view of Kimura, Yoshioka, Lei, and Makino and in further view of Slocum et al., US 5,733,024, and Cakmakci, US 4,836,968.

Art Unit: 1792

Takekuma does not teach the hinged attachment between chambers. However, it is well-known in the art to configure the chambers which compose a modular system as attachable/detachable to facilitate cleaning and maintenance, as taught by Slocum, for instance (1, 50-55). Slocum secures the chambers via kinematic couplings but does not teach a hinged attachment. Nevertheless, an express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious (*In re Fout*, 675 F.2d 297, 213 USPQ 532). Cakmakci articulates the general principle of attaching two chambers with a hinge to enable rotation about an axis, thereby demonstrating the equivalence of hinged attachments for the purpose connecting two discrete structures. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to secure the attachment of Takekuma's chamber portions and blocks through the use of a hinge.

Claims 12, 16, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takekuma in view of Kimura, Yoshioka, Lei, and Makino and in further view of Slocum.

Takekuma is silent regarding the presence of guide and positioning members. Slocum discloses a modular system wherein each process block is secured within a fixed reference frame via alignment elements (16), positioning elements (90), and attachment elements (89) (2, 43ff; Fig. 12). Any of these elements are capable of functioning as either a "connection end," "guide member," or a "positioning member." It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate guide and positioning members within the apparatus of Takekuma to configure the processing blocks as dimensionally stable and within a fixed reference frame (1, 43-48, 6, 10-30).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Nathan K. Ford whose telephone number is 571-270-1880. The examiner can normally be reached on M-F, 8:30-5:00

Art Unit: 1792

EDT. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland, can be reached at 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/N. K. F./

Examiner, Art Unit 1792

/Michael Cleveland/

Supervisory Patent Examiner, Art Unit 1792